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GEOGRAPHIC INFORMATION SYSTEMS FACT SHEET

What is an information system? We are familiar with such everyday information systems as telephone directories, dictionaries, encyclopedias and computer database programs. Most businesses use information systems to keep track of inventory costs and stock.

At the John C. Stennis Space Center in south Mississippi, researchers use another type of information system called Geographic Information Systems (GIS). GIS is an information system specifically designed to input, analyze, store and output geographic data or information that can be placed on a map.

Creating a database or map for GIS requires several steps. The first step is to decide the boundaries of the study and gather available information needed for this study. Information about a specific area can be gathered through online searches of the World Wide Web and in data catalogs. This can include information on the location of roads, railroads, paths, trails, population, land ownership, topography, soils, drainage basins, and utility and telephone lines. This information may be obtained from sensor data, satellite or airborne sensors, aerial photography, field surveys and other existing maps, as well as census data and surveys.

The locations of specific points on the different layers of GIS are referenced to one another by their relative position on Earth. The information used, such as the type of road, the property owner's name, the land use category, etc., is then linked to the map.

The power of GIS is its ability to take a large amount of information, capture it in an electronic format, and use it to analyze options and make informed decisions. GIS technology accomplishes in a matter of hours what previously took weeks. Commercial GIS products that run on standard personal computers are available.

GIS technology is used in almost every facet of natural resource management today, as well as infrastructure, urban planning, transportation or emergency responses. Oil companies use GIS to help in petroleum exploration, routing pipelines and locating production facilities. Timber companies use

GIS technology to decide where and when to harvest. City and urban planners use GIS to study trends in population density, income mediums and infrastructure development. GIS technology was used successfully to assess damage from two major oil spills, one off the Alaskan coast and one in the Persian Gulf. GIS technology also helped government officials target cleanup efforts in environmentally sensitive areas. Because of its flexibility, GIS can be adapted to the different needs of the user.

The ultimate benefit of GIS is its usefulness in making decisions. People use the information available to help determine the most suitable course of action to manage and sustain our Earth's valuable natural resources.

For more information on GIS technology, contact the Stennis Space Center Geospace Applications and Development Directorate (GADD) at (228) 688-2042, or access the GADD home page on the World Wide Web at www.crsp.ssc.nasa.gov.